June 22, 2018 Reference No. 038443-15

Ms. Tamara McPeek
Environmental Response and Revitalization
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio
45402

Dear Ms. McPeek:

Re: Notice of Violation of OAC 3745-9-03(B) and OAC 3745-9-03(C)
Improper Well Maintenance and Abandonment
South Dayton Dump and Landfill Site, Moraine, Ohio (Site)

In response to the Notice of Violation (NOV) identified in your letter dated May 14, 2018, GHD has prepared this letter and the attached "Well Location and Decommissioning Work Plan" pursuant to Item 3 of the NOV letter. GHD has prepared this submission on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) for Remedial Investigation/Feasibility Study (RI/FS) of the Site, Docket No. V-W-16-C-011 (Respondents).

As stated in the NOV letter, GHD found three monitoring wells to be inaccessible during the October 2017 RI groundwater monitoring event, as reported in GHD's letter dated December 5, 2017. This includes MW-217 and MW-228 located on Valley Asphalt property and MW-223B located on Dayton Power & Light (DP&L) property, each of which became inaccessible due to actions of the respective property owners. Based on earlier inspections and discussions with the property owners it was determined that two of the wells (MW-217 and MW-223B) appeared to be covered with asphalt pavement, both of which were constructed with flush-mount covers. We have not received any information from the property owners regarding how the wells became covered.

One of the wells (MW-217, Valley Asphalt) was repaired by GHD on May 31, 2018 by i) removing the pavement to expose the existing flush-mount cover, and ii) installing a new road box cover. The other well (MW-223B, DP&L) has been located by GHD using a metal detector and will be repaired by GHD in a similar fashion during upcoming RI field activities. The third well (MW-228, Valley Asphalt) is apparently located beneath a stockpile of reclaimed asphalt, related to Valley Asphalt's ongoing operations. GHD proposes to locate and decommission this well to avoid possible future interference related to Valley Asphalt operations. GHD is in discussions with Valley Asphalt to determine logistics, and it is anticipated that the well decommissioning will be conducted after Valley Asphalt removes the reclaimed asphalt stockpile according to their production schedule.

The information and procedures outlined above are included in the attached work plan (Attachment 1), for your review and approval.

GHD
455 Phillip Street Waterloo Ontario N2L 3X2 Canada
T 519 884 0510 **F** 519 884 0525 **W** www.ghd.com

Should you have any questions on the above, please do not hesitate to contact us.

Sincerely,

GHD

Julian Hayward

JH/cb/1

Encl.

cc: (all by pdf) Leslie Patterson, USEPA
Ken Brown, ITW
Bryan Heath, NCR
Wendell Barner, Barner Consulting
Jim Campbell, EMI
Larry Silver, LSSH
Valerie Chan, GHD

Attachment 1

Attachment 1 Well Location and Decommissioning Work Plan

1. Introduction

GHD, on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) Docket No. V-W-16-C-011 (Respondents), has prepared this Well Location and Decommissioning Plan (Plan) for the South Dayton Dump and Landfill Site, located at 1901 through 2153 Dryden Road (sometimes called Springboro Pike) and 2225 East River Road in Moraine, Ohio.

This Plan outlines the tasks that will be completed to locate and safely and successfully execute the well repair, or well removal and decommissioning activities at the Site.

In October 2017, GHD completed groundwater sampling activities but were unable to locate the following three monitoring wells: MW-217 and MW-228, located on Valley Asphalt property at 1901 Dryden Road; and MW-223B, located on Dayton Power and Light (DP&L) property, 1900 Dryden Road. Two of the wells (MW-217 and MW-223B) were suspected to be covered with asphalt pavement and the third (MW-228) was suspected to be buried under a stockpile of reclaimed asphalt.

On March 9, 2018, USEPA inquired about the planned resolution for Valley Asphalt wells MW-217 and MW-228. On March 12, 2018, GHD contacted Valley Asphalt Environmental Specialist, Craig Ousley, regarding access issues. On March 19, 2018, GHD and private utility locator Blood Hound Inc. attempted to locate the two monitoring wells on Valley Asphalt property using ground penetrating radar (GPR). On May 4, 2018, GHD and Valley Asphalt personnel met to view the suspected locations of MW-217 and MW-228 and determine access.

On May 14, 2018, the Ohio Environmental Protection Agency (Ohio EPA) issued a Notice of Violation (NOV) of OAC 3745-9-03(B) and OAC 3745-9-03(C) due to improper well maintenance and abandonment. The NOV was received by GHD via e-mail on May 21. This Plan was developed and submitted to address item 3 in the NOV.

On May 19, 2018, GHD and private utility locator Blood Hound Inc. used GPR to locate MW-217 on Valley Asphalt property. This well was re-instated by GHD on May 31, 2018 by installing a new road box cover. On June 6, 2018, GHD used a metal detector to locate MW-223B on DP&L property, within an existing roadway. The location will be confirmed by removing existing pavement around the well. It is expected that this well will be re-instated in 2018, by exposing and raising the flush-mount well cover. GHD is currently coordinating this work with DP&L in conjunction with upcoming groundwater investigation activities. The well abandonment activities described herein focus on MW-228, located at Valley Asphalt property.

2. Objective

The objective of the Plan activities is to successfully locate, and repair or decommission the two[1] monitoring wells (MW-223B and MW-228). All well decommissioning will be completed in accordance with the following documents:

[1] As noted in Section 1, MW-217 was located, repaired, and is accessible.

- Ohio EPA, *Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring*, Chapter 9: Sealing Abandoned Monitoring Wells and Boreholes, Revision 3 September 2016.
- Ohio Water Resources Council (OWRC), *Regulations and Technical Guidance for Sealing Unused Water Wells and Boreholes*, March 2015.

Any well repair and/or decommissioning activities will be conducted using an Ohio-licensed driller, with oversight being provided by a qualified GHD representative. The work will be completed under the existing Site Health and Safety Plan. The H&S Plan will be amended, if required, to support well decommissioning activities.

2.1 Monitoring Well Summary

The three monitoring wells, MW-217, MW-223B, and MW-228, were installed by direct push technology. The location of the three monitoring wells is shown on Figure 1. Table 1 includes a monitoring well summary, including well identification, type, location, screened interval, total depth, diameter, material, grout requirement, water level and the reason(s) for repairing or decommissioning each well. The stratigraphy logs for these wells are provided in Attachment 2.

2.2 Locating Activities

Efforts to locate wells, including MW-223B and MW-228, will consist of one or more of the following:

- Coordination with property owners and/or tenants in order to clear and access the area in the vicinity of the monitoring well
- Use of survey instrument to identify location based on available coordinate data, and/or GPR or metal detector

3. Monitoring Well Repair Activities

GHD and Respondents plan to repair MW-223B, with the acceptance/concurrence of property owner, DP&L.

Following the successful completion of the locating activities, the following well repair activities will be conducted by a licensed driller, with oversight being provided by a qualified GHD representative

- Remove any pavement or ground cover that blocks access to monitoring well
- Inspection of monitoring well condition, including but not limited to inspection of riser, and repair as needed
- Measure total depth of well
- Remove existing flush-mount cover and raise to match existing paved surface level, with new concrete pad and road box cover, subject to property owner preference and requirements
- Resurvey monitoring well using an Ohio licensed surveyor

4. Monitoring Well Decommissioning Activities

GHD and Respondents, in discussion with Valley Asphalt, plan to decommission MW-228 when possible. Based on GHD's current understanding, MW-228 is located in an area used by Valley Asphalt for their

operational activities, and therefore, cannot be protected from future damage or kept free for future access. GHD has discussed the abandonment requirements with Valley Asphalt and has requested their assistance relative to removal of the stockpiled asphalt, in 2018.

Following the removal of the stockpiled material (by Valley Asphalt) and successful completion of the well locating activities, the following well decommissioning activities will be conducted by a licensed driller, with oversight being provided by a qualified GHD representative:

- Remove any pavement or ground cover that blocks access to monitoring well
- Inspect monitoring well, and remove any obstacles (i.e. pumps, dedicated well sampling equipment, debris, etc.)
- Measure the well depth to determine if well is open to the constructed depth.
- Removal of outer protective casing
- Removal of well casing and well screen by overdrilling using a hollow steam auger using a bit with a diameter at least 1.25 times greater than the original diameter of the borehole. Drilling will extend slightly deeper than the original monitoring well depth to assure complete removal. The borehole will be cleared of any excess mud filtercake in order to achieve an effective seal.
- Pressure grout the borehole with a cement bentonite mixture using a tremie pipe as the drilling stem is removed in order to seal the borehole. The borehole will be sealed from the bottom of the borehole up to the frost line (approximately 2 to 3 feet from the surface).
- Inspect grout plug 24 hours after installation to check for settling. Add grout if required.
- Complete the remaining area above the grout plug in a manner compatible with the property. Ground surface will be restored as required by property owner.

5. Well Decommissioning Deliverables

Following the sealing of monitoring well(s), the following documentation will be submitted to Ohio EPA:

- Monitoring well identification (e.g., registration number, location, owner, etc.)
- Well construction details
- Date, time, person responsible, and contractor/consultant performing the work
- Authority under which sealing was performed
- Procedure and materials used, including predicted volume of grout, actual volume of grout used, and an explanation of any discrepancy between the two values)
- Details of disposal methods or procedures for any contaminated materials

In accordance with Ohio Revised Code 1521.05(C), a well sealing report will be filed with the Ohio Department of Natural Resources (ODNR), Division of Geologic Survey, within 30 days of sealing.

Details of well rehabilitation will be provided to USEPA and Ohio EPA

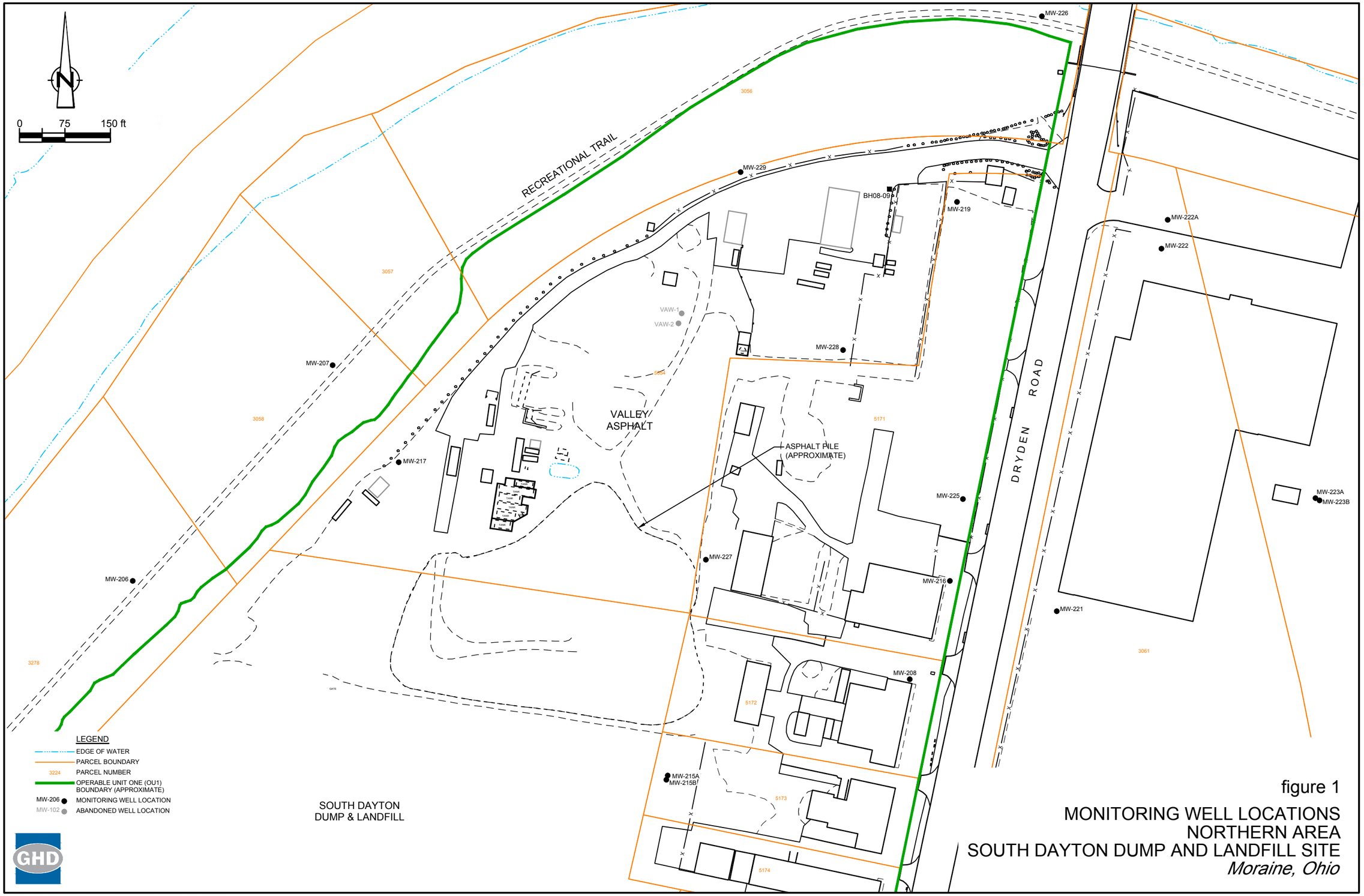

figure 1

MONITORING WELL LOCATIONS
NORTHERN AREA
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-15(MCPE001)GN-WA001 JUN 12, 2018

Table A.1

Well Information
Well Location and Decommissioning Plan
South Dayton Dump and Landfill Site
Moraine, Ohio

Well ID	Well Type	NAD83 Northing Coordinate	NAD83 Easting Coordinate	Approximate Screened Interval (feet bgs)	Approximate Screened Interval (feet AMSL)	Total Well Depth (feet bgs)	Total Well Depth (feet AMSL)	Overdrilling Diameter (inches)	Casing Material	Theoretical Volume of Grout Required (gallons)	Static Water Level (feet bgs)	Reason to be Plugged and Abandoned
Upper Aquifer Zone												
MW-217	Monitor	634203.23	1484742.27	45 - 50	692.03 - 687.03	50.0	687.0	8	PVC	131	25.64	Not Applicable - Well was located and repaired in May 2018
MW-228	Monitor	634388.19	1485475.11	19 - 29	716.88 - 706.88	30.0	705.9	8	PVC	78	27.30	Abandonment proposed to avoid future interference with property operations and eliminate physical hazards
Lower Aquifer Zone												
MW-223B	Monitor	634140.45	1486261.00	98.5 - 103.5	637.05 - 632.05	192.0	543.6	8	PVC	501	23.49	Not Applicable - Repair of well is proposed

Notes:

NAD = North American Datum of 1983 (NAD83), U.S. Survey feet
feet AMSL = feet Above Mean Sea Level, referenced to North American Vertical Datum 1988 (NAVD88)
feet bgs = feet below ground surface

Attachment 2

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-217
DATE COMPLETED: June 10, 2009
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	737.03					
	TOP OF CASING	736.65					
0	SW/GW - SAND & GRAVEL (FILL), some silt, little to trace clay; compact; fine to medium grained; well graded; dark gray; moist		Concrete				
2	SM - SILTY SAND (FILL); compact; fine-grained; poorly graded; dark gray; very moist	735.53					
4	SC - CLAYEY SAND (FILL), trace silt, fine to coarse gravel; compact; fine to coarse-grained; poorly graded; dark brown to gray; moist	733.53					
	CL - CLAY (FILL), with silt and fine to coarse sand; firm; low plasticity; brown; moist	732.73					
6	SW/GW - SAND & GRAVEL (FILL), some silt, little to trace clay, trace brick debris; compact; fine to medium grained; well graded; dark gray; moist	732.03					
8	SC - CLAYEY SAND (FILL), trace silt, fine to coarse gravel; compact; fine to coarse-grained; poorly graded; dark brown, to gray; moist	731.23					
10	SW - SAND (FILL), little gravel, little silt, trace clay, trace coal, brick, concrete, glass debris; compact; fine to medium grained; well graded; dark gray; moist	730.63					
12							
14							
16							
18							
20	SM - SILTY SAND, trace clay and fine gravel; compact; fine to coarse-grained; poorly graded; dark gray to black; moist; trace concrete and brick debris	718.53					
22	SM/GM - SILTY SAND and GRAVEL, trace clay; compact; fine to coarse sand, fine gravel; brown; moist	716.53	Bentonite Grout				
24							
26	SP - SAND, with fine to coarse-grained gravel; compact; fine to coarse-grained; poorly graded; light brown; moist	712.53	2" PVC Casing				
28	SW/GW - SAND and GRAVEL, trace silt, trace cobble; compact; fine to coarse sand and gravel; well graded; brown; wet	710.03					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG MONITORING WELLS.GPJ CRA_CORP.GDT 2/5/10

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-217
DATE COMPLETED: June 10, 2009
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
32							
34	SP - SAND, trace silt and fine gravel; compact; fine grained; medium to coarse grained; poorly graded; brown; wet	704.03					
	SW/GW - SAND and GRAVEL, trace silt, trace cobble; compact; fine to coarse sand and gravel; well graded; brown; wet	703.03					
36	SP - SAND, trace silt and fine gravel; compact; fine-grained, medium to coarse grained, poorly graded, brown, wet	700.93					
38							
40							
42			Bentonite Chip Seal				
	SW - SAND, some silt, little gravel; compact; fine to medium grained; well graded; brown; very moist	694.03					
44							
46			Sand pack, size #5				
	SW/GW - SAND & GRAVEL, little silt; compact; fine to coarse grained; well graded; brown; wet	690.53	Well Screen				
48							
50	END OF BOREHOLE @ 50.0ft BGS	687.03					
52							
54							
56							
58							

WELL DETAILS
Screened interval:
692.03 to 687.03ft
45.00 to 50.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 10
Material: PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG MONITORING WELLS.GPJ CRA_CORP.GDT 2/5/10

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
	GROUND SURFACE TOP OF CASING	735.55 735.04						
0	ASPHALT	735.35						
	SP/GP - SAND & GRAVEL (FILL), trace silt; compact; fine to coarse sand; fine to coarse gravel; poorly graded; light brown; moist	734.75						
2	CL - CLAY (FILL), with fine to coarse sand & gravel; firm; low plasticity; dark brown; moist	733.05						0.9
4	SM/GM - SILTY SAND & GRAVEL (FILL), trace clay; compact; fine to coarse sand; fine to coarse gravel; dark brown; moist; poorly graded							
6								
8								2.9
10								
12		723.05						
14	SC/GC - CLAYEY SAND & GRAVEL (FILL), with cobble; trace silt; compact; fine to coarse sand; fine to coarse gravel; poorly graded; medium to dark brown; moist; trace glass and brick debris							0.3
16								
18	SP - SAND, trace silt and fine gravel; compact; fine to medium grained; poorly graded; brown; moist	717.55						1.6
20								
	CL - SILTY CLAY, firm; low plasticity; brown; moist	714.55						
22	- with fine to coarse sand and gravel at 21.5ft BGS	713.65						
	SP - SAND, with fine to coarse gravel; compact; fine to coarse grained; poorly graded; brown; moist							1.0
24								
26	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine gravel; well graded; brown; wet	710.05						
	- fine to coarse gravel; with cobble at 26.0ft BGS							
28								13.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
32	- trace cobble at 31.0ft BGS							
	GP - GRAVEL & COBBLE, trace fine to coarse sand; loose; fine to coarse gravel; brown; wet	703.55						*
34								
36	CL - CLAY, with silt and fine to coarse sand; trace fine to coarse gravel and cobble; stiff; low plasticity; brown; moist	699.95						
38								*
40								
42								
44								*
46	- few fine to coarse sand and fine gravel; trace coarse gravel and cobble at 46.0ft BGS		Bentonite Grout					
48								*
50								
52			2" PVC Casing					
54								*
56								
58	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet; with silty clay nodules	677.05						3.9

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
	CL - CLAY, with silt; few fine to coarse sand & fine gravel; very stiff; low plasticity; gray; moist	675.55						
62	- 0.2' fine to coarse sand seam; wet at 60.8ft BGS - 0.2' fine to coarse sand seam; wet at 61.3ft BGS							
64	- 0.2' fine to coarse sand seam; wet at 61.9ft BGS - trace fine to coarse sand; few fine to coarse gravel at 63.2ft BGS							*
66	- 0.3' thick cobble at 66.0ft BGS							
68								*
70								
72								
74	- 0.1' fine to coarse sand seam at 74.1ft BGS - few fine to coarse sand and fine gravel at 74.8ft BGS							*
76	- firm; medium plasticity at 76.0ft BGS							
78	- few fine to coarse sand and grave; trace cobble; hard; low plasticity at 78.8ft BGS							*
80								
82								
84								*
86								
88	- with fine to coarse sand; few fine to coarse gravel at 87.0ft BGS							
	SW - SAND, with fine gravel; trace silt; loose; fine to coarse grained; well graded; gray; wet	647.25						0.3

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
92	SP - SAND, trace silt; fine gravel; compact; fine to coarse grained; poorly graded; gray; wet	643.55						
		642.05	Bentonite Chips					2.1
94	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet							
96								
98								6.6
		636.05						
100	SP - SAND, trace silt & fine gravel; compact; fine to coarse grained; poorly graded; gray; wet - trace fine to coarse gravel at 100.5ft BGS		Sand Pack					
		634.55	Well Screen					
102	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet							
104								5.5
106	GW - GRAVEL, with coarse sand; trace fine to medium sand and cobble; compact; fine to coarse gravel; well graded; gray; wet	629.55						
		628.45						
108	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet							14.3
		626.55						
	GW - GRAVEL, with coarse sand; trace fine to medium sand and cobble; compact; fine to coarse gravel; well graded; gray; wet	625.95						
110	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet							
112								
114								6.7
116	GW - GRAVEL, with fine to coarse sand; trace cobble; loose; fine to coarse gravel; well graded; gray; wet	619.55						
118								1.4
	SP - SAND, with gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet	616.55						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
122			Natural Collapse					
124								1.0
126	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet	609.55						
128								2.5
130								
132								
134								2.3
136								
138	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet	598.55						9.7
140	GW - GRAVEL, with coarse sand; trace fine to medium sand and cobble; compact; fine to coarse gravel; well graded; gray; wet	596.55 595.55						
142	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet - gravelly sand at 140.5ft BGS - with fine to coarse gravel; trace cobble at 141.0ft BGS							
144	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet	591.55						3.2
146								
148	GW - GRAVEL, with fine to coarse sand; trace cobble; loose; fine to coarse gravel; well graded; gray; wet	588.55	Natural Collapse					4.6

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
152								
	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet	583.05						4.5
154								
	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; gray; wet; brown-gray	580.85						
156								
	- fine to medium grained; trace fine to coarse gravel at 157.0ft BGS							
158								5.5
160	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; trace cobble; well graded; gray; wet	575.55						
162								
164								5.1
166	- fine to coarse sand; fine gravel at 166.0ft BGS							
168	- 0.8' well graded; fine to coarse gravel seam at 168.0ft BGS - fine to coarse sand; fine to coarse gravel at 168.8ft BGS							1.5
170								
172								
174								1.8
176								
178								2.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-223B
DATE COMPLETED: March 23, 2010
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FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
182	SP - SAND, with fine gravel; trace silt, clay and coarse gravel; compact; fine to coarse grained; poorly graded; brown; wet	554.55						
184			Natural Collapse					1.9
186	SC/GC - CLAYEY SAND & GRAVEL, trace silt; compact; fine to coarse sand and gravel; poorly graded; gray; wet	549.55						
188	CL - CLAY, with silt; fine to coarse sand and gravel; firm; low plasticity; brown-gray; moist	547.55						1.6
190	WEATHERED BEDROCK, sand, gravel and cobble size pieces of limestone in a clay size limey matrix; very hard; gray; damp	545.55						
192	END OF BOREHOLE @ 192.0ft BGS	543.55						
194			WELL DETAILS Screened Interval: 637.05 to 632.05ft 98.50 to 103.50ft BGS Length: 5ft Diameter: 2in Slot Size: 10 Material: PVC Sand Pack: 640.05 to 630.55ft 95.50 to 105.00ft BGS Material: Sand size #5 ---------- Sand Pack: 734.55 to 644.05ft 1.00 to 91.50ft BGS Material: Bentonite Grout					
196								
198								
200								
202								
204								
206								
208								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-228
DATE COMPLETED: 26 March 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
	GROUND SURFACE	735.88						
	ASPHALT	735.68						
	SP/GP - SAND & GRAVEL (FILL), trace silt; compact; fine to coarse sand; fine gravel; dark brown; moist							0.8
	CL - CLAY (FILL), with fine to coarse sand and fine gravel; firm; low plasticity; brown & gray; moist; trace brick debris	732.88						
	RED BRICK DEBRIS (FILL)	731.88						
	MIX OF SAND & RED BRICK DEBRIS (FILL), compact; fine to coarse sand; poorly graded; dark gray to black sand; red & tan brick; moist	731.28						
	MIX OF SAND, FLY ASH & BRICK DEBRIS (FILL), compact; fine to coarse sand; silt size fly ash; gray to black sand and fly ash; red and tan brick; moist	730.28	Bentonite Grout					1.7
	FLY ASH (FILL), compact; silt size; dark gray; wet; trace slag, glass and brick debris	727.88						
	CL - CLAY (FILL), with silt; trace fine sand; firm; low plasticity; brown to dark gray; moist; trace fly ash	723.88						1.8
	SP/GP - SAND & GRAVEL (FILL), trace silt; fine to coarse sand; fine to coarse gravel; brown; moist; trace brick and concrete debris	721.38	2" PVC Casing Bentonite Chips					
	SM - SILTY SAND, trace fine to coarse gravel;	718.38						1.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38443 MONITORING WELLS UPDATED MAR 2010.GPJ CRA_CORP.GDT 26/4/10

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: SOUTH DAYTON DUMP AND LANDFILL SITE
PROJECT NUMBER: 038443-70
CLIENT: PRP Group
LOCATION: Moraine, Ohio

HOLE DESIGNATION: MW-228
DATE COMPLETED: 26 March 2010
DRILLING METHOD: SONIC
FIELD PERSONNEL: D. Rivers

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE Headspace PID (ppm)
20	compact; fine to coarse grained; poorly graded; light brown; moist							
	SP - SAND, with fine to coarse gravel; trace silt; compact; fine to coarse grained; poorly graded; brown; moist	714.88						3.8
22								
	SW/GW - SAND & GRAVEL, trace silt; compact; fine to coarse sand; fine to coarse gravel; well graded; brown; moist to wet - wet at 23.5ft BGS	712.88	Sand Pack Well Screen					2.9
24								
26								
28								
30	END OF BOREHOLE @ 30.0ft BGS	705.88						
32								
34								

WELL DETAILS
Screened interval:
716.88 to 706.88ft
19.00 to 29.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 10
Material: PVC
Sand Pack:
718.88 to 705.88ft
17.00 to 30.00ft BGS
Material: Sand size #5

Sand Pack:
734.88 to 722.88ft
1.00 to 13.00ft BGS
Material: Bentonite Grout

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE